

UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF WISCONSIN

ILLUMINATION MANAGEMENT  
SOLUTIONS, INC.,

Plaintiff,

v.

RUUD LIGHTING, INC.,

Defendant.

Case No. 11-CV-34-JPS

ORDER

This action, filed by plaintiff Illumination Management Solutions, Inc. (“IMS”), alleges two counts of patent infringement and one count of civil conspiracy against defendant, Ruud Lighting, Inc. (“Ruud”). (Docket #1 and #89). Currently before the court is Ruud’s Motion for Partial Summary Judgment of Noninfringement (“Noninfringement Motion”) (Docket #161).

When evaluating a claim of patent infringement, the court engages in a two-step process. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff’d*, 517 U.S. 370 (1996). The first step is to construe any disputed terms of the patent claims, and the second step is to compare the claims, once properly construed, with the accused device. *Id.* Claim construction is a question of law for the court, *id.* at 979, while comparison of the construed claims to the accused device is typically an issue of fact for a jury. *Bai v. L & L Wings, Inc.*, 160 F.3d 1350, 1353 (Fed. Cir. 1998). In this case, the first step of this process is complete, as the court decided the construction of disputed claim terms on June 8, 2012. (“Claim Construction Order”) (Docket #147).

With the benefit of the parties' submissions on the Noninfringement Motion, it is apparent to the court that one of the definitions from the Claim Construction Order requires further clarification. This Order thus revisits the June 8, 2012 Claim Construction Order, and then resolves Ruud's Noninfringement Motion.

First, a brief review of the background facts of the case and the June 8, 2012 Claim Construction Order. IMS is the owner of U.S. Patent Nos. 7,674,018 ("the '018 patent") and 7,993,036 ("the '036 patent"), both entitled "LED Device for Wide Beam Generation." The '018 and '036 patents assert claims requiring a "lens" or a "lens means"<sup>1</sup> that is "optically coupled" to a light source, typically an LED. See '018 patent, claims 1, 50, and 51; '036 patent, claims 6 and 19. In its claim construction briefing, the parties disputed what it means for a lens and light source to be "optically coupled." Ruud advocated for a construction of "optically coupled" as a lens "positioned to directly receive light, or receive light via an index-matching material, such that no substantial air gap is present relative to the light source." Ruud's Opening Claim Construction Memorandum (Docket #114) at 14. IMS first suggested that construction of the term was unnecessary, but alternatively proposed a broader definition that a lens is "optically coupled" to a light source if it is "arranged to receive light from a light source." IMS's Initial Claim Construction Brief (Docket #117) at 16. The court, considering these arguments and the patents' claims and specifications, determined that the term "optically coupled" as used in the patents means "positioned to directly

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<sup>1</sup>The term "lens means" appears only in the '018 patent. "Lens means" and "lens" will be collectively referred to as "lens" for purposes of this Order.

receive light such that no substantial air gap is present relative to the light source.” Claim Construction Order at 14.

The purpose of claim construction in a patent case is to “determin[e] the meaning and scope of the patent claims asserted to be infringed.” *Markman*, 52 F.3d at 976. “The court must properly interpret the claims, because an improper claim construction may distort the infringement [ ] analys[is].” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001) (citing *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443 (Fed. Cir. 1986)). It is apparent from the filings submitted by both parties regarding the Noninfringement Motion that the use of the adjective “substantial” to modify the noun “air gap” lacks sufficient precision to “determin[e] the meaning and scope” of “optically coupled.” In its Noninfringement Motion, Ruud interprets the claim construction as follows:

under the Court’s construction, a lens may be optically coupled if the air gap is eliminated—or virtually eliminated—by the use of an optical coupling gel or other index-matching material, or by molding the lens directly over the LED or—theoretically—by any other material or method that might eliminate this air gap. But elimination—or virtual elimination—of the air gap is required under the Court’s construction.

Brief in Support of Noninfringement Motion (“Motion Brief”) (Docket #162) at 13. With this argument Ruud endeavors to construe the construction to read the prohibition of a “substantial air gap” as a requirement of “elimination—or virtual elimination—of the air gap.” Ruud offers a definition of “substantial air gap” as “an air gap that is larger than the wavelength of light emitted by the light source.” Motion Brief at 18. The

justification of this definition is the elimination of “optical discontinuity,”<sup>2</sup> which Ruud contends is fundamental to the patents’ teachings.

IMS’s Response rejects Ruud’s position regarding optical discontinuity. On one hand, IMS contends that the disagreement over what constitutes a “substantial air gap” presents a question of fact for the jury. Response (Docket #167) at 16. On the other hand, while not directly urging the court to adopt a more specific definition of “substantial air gap,” IMS contests Ruud’s motion by citing analysis from its expert that considers what IMS terms the “efficiency impact of the air gap.” Response at 15. Fundamental to IMS’s argument is the idea that the air gaps in Ruud’s optics are not substantial because Ruud’s optics are efficient.

“District courts may engage in a rolling claim construction, in which the court revisits and alters its interpretation of the claim terms as its understanding of the technology evolves.” *Jack Guttman, Inc. v. Kopykake Enters., Inc.*, 302 F.3d 1352, 1361 (Fed. Cir. 2002) (citing *Sofamor Danek Group, Inc. v. DePuy-Motech, Inc.*, 74 F.3d 1216, 1221 (Fed. Cir. 1996)). It is evident from the parties’ briefing that the current construction of the term “optically coupled” has added a layer of contention, rather than clarifying the scope of the patent for comparison to Ruud’s devices. It is also evident that the parties’ divergent views are fundamental to their arguments on the Noninfringement Motion. Therefore, rather than muddle through the pending motions for summary judgment with imprecise claim construction,

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<sup>2</sup>IMS’s expert, Dr. Mistrick, defines optical discontinuity as “additional losses from those surfaces that lie on either side of the air gap.” Mistrick Report (Docket #165-7) ¶ 56.

the court opts to “revisit[] and alter[]” the claim construction for this term.

*Id.*

Contrary to IMS’s position, the parties’ disagreement does not automatically constitute a question of fact that must be decided by the jury. Quite the opposite: claim construction is a question of law, and “the court has the power and obligation to construe as a matter of law the meaning of language used in the patent claim.” *Markman*, 52 F.3d at 979. Having concluded that the court’s June 8, 2012 Claim Construction Order does not adequately fulfil this obligation, the court now revisits its construction of the claim “optically coupled” as utilized in the patents.

#### 1. Legal Standards: Claim Construction

The Federal Circuit’s seminal opinion on claim construction is *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). *Phillips* recognizes that the issue of claim construction breaks down into two scenarios: those that involve “little more than the application of the widely accepted meaning of commonly understood words[,]” and those that involve “examination of terms that have a particular meaning in a field of art.” *Id.* at 1314. For the former scenario, *Phillips* advises that “general purpose dictionaries may be helpful.” *Id.* For the latter scenario, *Phillips* advises use of “‘the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.’” *Id.* (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)). The words of the patent’s claims are given their ordinary and customary meaning that would have been attributed to them by a person of ordinary skill in the art at the time the invention was made. *Phillips*, 415 F.3d at 1313.

“Properly viewed, the ‘ordinary meaning’ of a claim term is its meaning to the ordinary artisan after reading the entire patent.” *Id.* at 1321.

## 2. Analysis: Claim Construction

The term “optically coupled” appears several times in IMS’s patents. Claim 1 of the ‘018 patent is representative of the use of the phrase, and recites: “An apparatus for illuminating a selected surface with an illumination pattern comprising: a light source [...]; and lens means *optically coupled* to the light source...” ‘018 patent, col. 19 at 22-26 (spacing modified; emphasis added). The specification describes the invention as having lens surfaces that are “optically closely coupled to the LED source and ideally have no air gap or at least no substantial air gap between the LED and [lens surface].” ‘018 col 13 at 14-18. Considering this description of the invention, and hereby incorporating the reasoning from the original Claim Construction Order, the court concludes that the requirement that the patented devices have “no air gap or at least no substantial air gap” supports two conclusions: (1) that the lens and light source may have *at a minimum* no substantial air gap between them; and (2) that this requirement applies not only to a preferred embodiment, but to the invention in its entirety. Claim Construction Order at 13-14.

The parties have divergent views regarding when an air gap separating a lens and light source is substantial enough that the lens and light source are not “optically coupled” for purposes of the patent. Ruud notes that the patents repeatedly teach two ways of preventing losses or refraction: (1) bonding the light source and lens with an optical coupling gel or an

index-matching material;<sup>3</sup> or (2) integrally manufacturing the lens and light source to be the same piece.<sup>4</sup> The patent explains that this “optical coupling” prevents any intervening air gap “from causing any losses or providing any refraction.” ‘018 col.11 at 6-10. Citing these passages, Ruud argues that the patents teach that an air gap is substantial if it is large enough to cause losses or refraction.

IMS cites the report from its expert witness, Dr. Mistrick, for support that the air gaps in the Ruud devices are not substantial. Response at 13-18. The main portions of Dr. Mistrick’s analysis discuss the efficiency of the

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<sup>3</sup>See, e.g., ‘018 col. 11 at 6-10 (“In this embodiment the hemispherical cavity is filled with a material whose index of refraction matches that of the protective dome of the LED to virtually eliminate the cavity defining interior surface of dome from causing any losses or providing any refraction.”); col. 9 at 31-34 (“In the preferred embodiment of the invention the lens is 'glued' to the original LED protective cover with an index matching material so as to virtually eliminate the seam between the two.”); col. 5 at 66 to col. 6 at 3 (“In one embodiment the lens is separate from the LED and is glued, affixed or disposed on the light source or original LED protective dome with an index matching material so as to virtually eliminate the seam or any optical discontinuity between the two”); and col. 13 at 27-32 (“LED emitter is disposed approximately at the center of the hemispherically shaped surface of FIGS. 7 and 8, which matches the shape of dome. LED package and the device are optionally bonded with an index matching material at surface of lens and the dome of the LED package.”) (internal references to element numbers omitted).

<sup>4</sup>See, e.g., ‘018 col. 13 at 32-37 (“It is contemplated by the invention that the device be incorporated in the production of the LED package in an alternate embodiment whereby the manufacturer of the LED does not bond a separate lens to the LED; however, the lens of device is the protective dome of the LED package itself.”) (internal references to element numbers omitted).

devices.<sup>5</sup> IMS's Response Brief summarizes Dr. Mistrick's opinion as follows: "Through his analyses, Dr. Mistrick determined that the air gaps between the LED domes and the inner surfaces of Ruud's 73x, 77x and 82x series lenses do not contribute substantially to the losses of flux through the lenses." Response at 13. Thus, IMS argues that because Ruud's devices are efficient devices, the air gap is insubstantial and the lenses are optically coupled to the light sources.

Ruud argues that IMS's efficiency analysis is irrelevant because "the patents do not teach, much less claim, an 'efficient' optic with or without an air gap." Motion Brief at 14. Instead, Ruud argues, the patents "only teach one cause of and manner of addressing inefficiency—that the presence of an air gap leads to inefficiency, and that the way you deal with that inefficiency is to eliminate (or at least virtually eliminate) the gap." Motion Brief at 14.

Considering these two arguments, the court agrees with IMS's assessment that, "both sides agree that the impact on efficiency is a consideration in determining whether an air gap is substantial." Response at 16. Efficiency of the devices is fundamental to IMS's analysis, and Ruud's

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<sup>5</sup>Dr. Mistrick concludes from the "geometry" of the devices that they "allow[] substantially all the light from the LED to be corrected by the nano optic and subsequently refracted into the beam at the exterior surface of the nano optic." Mistrick Report (Docket #165-7) ¶ 52. Dr. Mistrick then states that the conclusion is confirmed by Ruud's "IES" files of photometric analyses for the lenses at issue, and by deposition testimony from Kurt Wilcox, the designer of Ruud's products. Mistrick Report ¶¶ 53-55. Dr. Mistrick opines that the air gap's contribution to loss of flux is not substantial because the light that would be lost due to refraction are is "eventually refracted into the beam." Mistrick Report ¶ 56. Mistrick further opines that the gap is insubstantial because it does not cause transmission losses or create a path for substantial quantities of light to avoid striking the lens. Mistrick Report ¶ 57. Dr. Mistrick opines that many of the losses from Ruud lenses appear to be caused by the outside lens surface. Mistrick Report ¶ 58.

standard considering optical discontinuity ultimately describes losses (which are inefficiencies). In the court's view, the real dispute can be framed as whether the *lens* is a consideration in determining whether an air gap is substantial. That is, by IMS's proposed "efficiency impact" standard, the data relevant to determining whether or not an air gap is substantial quantifies the efficiency of the entire device; by Ruud's proposed optical continuity standard, the relevant data is the measurement of the air gap alone.

The court concludes that Ruud's proposed definition incorporating consideration of optical discontinuity to the construction of "optically coupled" accurately reflects the teachings of the patents-in-suit. First, the court returns to the principal passage on air gaps, which describes the invention as follows:

In the present inventions [lens] surfaces are near field surfaces in that they are optically closely coupled to the LED source and ideally have no air gap or at least no substantial air gap between the LED and the [lens] surface.

'018 col. 13 at 15-19 (internal references to element numbers omitted). This passage is describing distances, not efficiency. The parties acknowledged as much when they submitted proposed constructions of "near field" during the initial claim construction briefing.<sup>6</sup> Moreover, Ruud is entirely correct that the patents teach integral manufacturing or using a coupling gel to achieve a "seamless" connection to prevent optical discontinuity. There is no

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<sup>6</sup>IMS suggested that "near field" means "*close enough to the light source that the rays entering the lens and passing through the lens must be considered to be coming from different directions.*" IMS's Initial Claim Construction Brief (Docket #117) at 14 (emphasis added). Ruud suggested, and the court adopted, a definition of "near field" as "*very close to the light source which is not separated from the light source by a substantial gap.*" Ruud's Opening Claim Construction Memorandum (Docket #114) at 16 (emphasis added).

embodiment of the patent that suggests manipulating the inner surface of the lens to achieve efficiency. The court, therefore, concludes, as a matter of law, that a person of ordinary skill in the art at the time the invention was made, upon considering the entire patent, *Phillips*, 415 F.3d at 1321, would have understood the term “optically coupled” to mean “positioned to directly receive light, such that no air gap causing optical discontinuity is present relative to the light source.” The court agrees with Ruud that this construction reflects an understanding of the “entire patent,” *Phillips*, 415 F.3d at 1321, and limits “the asserted patents to the only mechanisms of improving efficiency that are actually described and claimed therein.” Motion Brief at 19.

IMS objects to constructing “optically coupled” as requiring optical continuity on the ground that it “would require an invention that is virtually impossible to manufacture in the real world.” Response at 3. IMS points to an embodiment of the invention generally denoted in the ‘018 patent by reference numeral 10, and depicted in figures 21-26. Response at 7. This embodiment comprehends the existence of an air gap in its non-ideal form. Figure 24 of the ‘018 patent is briefly described as “a side plan view of the embodiment of the invention [...] showing in phantom outline the LED on which the lens of the device is mounted.” ‘018 col. 8 at 10-12. Figure 24 is described in greater detail as follows:

In FIG. 24, interface 62 between dome 19 and lens 21 is utilized if the lens 21 is a molded optic separate from the LED. [...] Interface 62 is comprised of the two mating surfaces of the LED dome 19 and the inside of the lens 21. It would be most desirable if the interface were bonded with an index matching cement or a thixotropic index matching material were retained in interface 62.

‘018 col. 15 at 48-56. The patent’s embodiment thus comprehends the existence of an air gap, in the instance where the “lens is a molded optic separate from the LED” and the “most desirable” arrangement whereby the interface is bonded with index matching material is not utilized.

IMS contends that the application of Ruud’s proffered claim construction to this embodiment would require that the air gap (interface 62) be small enough that it does not result in optical discontinuity, and that such a device would be impossible to manufacture. Response at 3. IMS encourages the court to consider the real-world implications of such construction, citing *Talbert Fuel Sys. Patents Co. v. Unocal Corp.*, 275 F.3d 1371, 1376 (Fed. Cir. 2002) (vacated and remanded on other grounds 537 U.S. 802 (2002)) (“a construction that renders the claimed invention inoperable should be viewed with extreme skepticism.”).

First, the Federal Circuit has clarified that the above-quoted statement from *Talbert* “refers to a construction that would render *all embodiments* of a claimed invention inoperable, not a construction that might cover *some inoperable embodiments*.” *Cordis Corp. v. Medtronic Ave, Inc.*, 511 F.3d 1157, 1174 (2008) (emphasis added). The construction does not render all embodiments inoperable, and in fact preserves the embodiments that are described consistently and repeatedly throughout the patent: integrally manufacturing the lens and LED dome as the same piece, or bonding the two pieces using an optical coupling gel. Indeed, the description cited by IMS encourages the use of a coupling gel, stating that “[i]t would be most desirable if the interface were bonded with an index matching cement or a thixotropic index matching material were retained in interface 62.” ‘018 col. 15 at 53-56.

Second, judging the evidence before the court, the parties appear to agree that manufacturing such a device would be difficult, but not impossible. IMS's expert, Dr. Mistrick, opined that manufacturing such a device would be "virtually impossible," but did not state it would actually be impossible. *See* PF ¶ 10. Ruud's expert, Mr. Falicoff, conceded that it would be "difficult" and likely expensive, but testified that it would not be impossible. *See* PF ¶ 10.

Thus, for the reasons stated above, the court concludes, as a matter of law, that a person of ordinary skill in the art at the time the invention was made, upon considering the entire patent, *Phillips*, 415 F.3d at 1321, would have understood the term "optically coupled" to mean "positioned to directly receive light, such that no air gap causing optical discontinuity is present relative to the light source."

### 3. Legal Standards: Motion for Summary Judgment

Having properly constructed the claim, the court now considers Ruud's Noninfringement Motion. The general standard for assessing motions for summary judgment applies, namely: "The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a); *see also Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247-48 (1986). "Material facts" are those under the applicable substantive law that "might affect the outcome of the suit." *Anderson*, 477 U.S. at 248. A dispute over a "material fact" is "genuine" if "the evidence is such that a reasonable jury could return a verdict for the nonmoving party." *Id.*

When evaluating a claim of patent infringement, the court engages in a two-step process. *Markman*, 52 F.3d at 976. The first step is to construe any

disputed terms of the patent claims, and the second step is to compare the claims, once properly construed, with the accused device. *Id.* It is well within the purview of the district court to decide the question of infringement short of trial, and the Federal Circuit has “repeatedly emphasized that ‘summary judgment is as appropriate in a patent case as in any other.’” *Avia Group Int'l, Inc. v. L.A. Gear Cal.*, 853 F.2d 1557, 1561 (Fed.Cir.1988) (citations). “Summary judgment of noninfringement may only be granted if, after viewing the alleged facts in the light most favorable to the nonmovant and drawing all justifiable inferences in the nonmovant's favor, there is no genuine issue whether the accused device is encompassed by the patent claims.” *Novartis Corp. v. Ben Venue Laboratories, Inc.*, 271 F.3d 1043, 1046 (Fed. Cir. 2001) (citing *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1304 (Fed. Cir.1999)).

#### 4. Analysis: Motion for Summary Judgment

##### 4.1 The Structure of Ruud's Devices

IMS alleges that optics in three series of Ruud products (series 73x, 77x, and 82x) infringe on its patents. Proposed Facts (“PF”) (Docket #206 ¶ 16. In its Noninfringement Motion, Ruud contends that two of its allegedly infringing product lines, the 77x and 82x models,<sup>7</sup> do not infringe on IMS's patents because the gap between the light source and lenses result in optical discontinuity and are, therefore, not “optically coupled” as the term is used in the patents. The structure of Ruud's optics is undisputed. Ruud's 77x series optics include a lens with intricate internal surfaces that are exposed

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<sup>7</sup>Ruud concedes that the lens and light source in the 73x series devices are “optically coupled.” PF ¶ 22. The 73x series is designed so that the internal cavity of the lens has the same shape as the LED package over which it is placed. PF ¶ 19. Ruud admits to filling the air gap between the lens and the LED package with optical coupling gel. PF ¶ 20.

by the air gap between the LED package and the lens.<sup>8</sup> PF ¶ 25. These internal surfaces are able to reflect and redirect light from the light source. PF ¶ 26. Similarly, Ruud's 82x series optics include an air gap and reflective surfaces internal to the device. PF ¶ 31. Ruud does not use an optical coupling gel or any other mechanism to fill the air gap between the light source and the internal surface of the lenses for these two series of optics. PF ¶ 34. The parties describe the size of the air gaps in Ruud's optics with respect to the wavelength of light emitted by the light source, in this case, LEDs. PF ¶ 36. It is undisputed that the gaps in Ruud's devices are exponentially larger than the wavelength of light from the LED light source. PF ¶ 58. The wavelengths of light emitted from the LEDs used by Ruud in the 77x and 82x optics range from 400 to 750 nanometers. PF ¶ 54. The air gaps in the optics range from 0.002 inches to 0.312 inches, or 100 times to nearly 20,000 times the wavelength of the LED light. PF ¶ 55, ¶ 57.

#### 4.2 Comparison of the Constructed Patent Claim to Ruud's Devices

Applying the properly-constructed claims to the undisputed structure of Ruud's devices, it is obvious that Ruud's series 77x and 82x devices do not infringe the patents-at-suit because the lens and light source are not "optically coupled."

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<sup>8</sup>The parties dispute the import of Ruud's advertisements for "direct contact refractors," both citing *PharmaStem Therapeutics, Inc. v. Viacell, Inc.*, 491 F.3d 1342 (Fed. Cir. 2007). Ruud correctly states that the court in *PharmaStem* concluded that advertisements did not provide a proper basis for a finding of infringement. Motion Brief at 17. In rebuttal, IMS accurately recites the very next paragraph of the opinion, which states that admission of advertisement as evidence is not prohibited in an infringement case. Response at 16. The court concludes that this dispute does not constitute a "genuine issue of material fact" because there is no dispute that Ruud's actual devices utilize lenses that are not in direct contact with the LED.

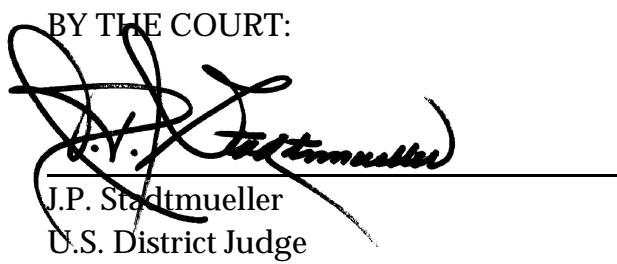
Though the parties dispute the precise point at which an air gap results in optical discontinuity, definition of this exact point is unnecessary to the resolution of Ruud's motion. Dr. Mistrick, IMS's expert, opines that "even air gaps less than the wavelength of light will result in reflected light energy." Mistrick Report ¶ 56. Ruud has offered opinions from two experts on this point; Dr. Miñano testified that discontinuity results in any air gap larger than one wavelength of light, and Mr. Falicoff believes the cut off to be at a distance of less than a half-wavelength. By any of those standards, the air gap between the light source and lens in Ruud's 77x and 82x series optics results in optical discontinuity because the gaps are at least 100 times the wavelength of the LED light. PF ¶ 57. Thus, no reasonable jury could conclude that Ruud's 77x and 82x series optics are "encompassed by the patent claims" *Novartis*, 271 F.3d at 1046, and Ruud is entitled to summary judgment of noninfringement.

Accordingly,

IT IS ORDERED that Ruud's Motion for Partial Summary Judgment of Noninfringement (Docket #161) be and the same is hereby GRANTED. This Order is limited to devices in Ruud's series 77x and 83x optics, thus IMS's claims of infringement as to the 73x series remain viable.

Dated at Milwaukee, Wisconsin, this 31st day of October, 2012.

BY THE COURT:



J.P. Stadtmauer  
U.S. District Judge